

# NEW SPECIES AND RECORDS OF PHYTALMIINAE (DIPTERA: TEPHRITIDAE) FROM AUSTRALIA AND THE SOUTH PACIFIC

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## Abstract

*Dirioxa fuscipennis* sp. n. and *Themaroides bicolor* sp. n. are described from Vanuatu and Papua New Guinea respectively. *Dacopsis apicalis* Hardy is placed as a new synonym of *D. holoxantha* (Hering). *Dirioxa incerta* (Hardy), comb. n. is transferred from *Acanthonevra* Macquart. *Emheringia* Hardy (= *Heringomyia* Hardy) is placed as a new synonym of *Seraca* Walker and *S. longiplaga* (Hering), comb. n. is transferred. *Robertsonomyia* Hardy is transferred to the Platystomatidae. Host plant and/or distribution records are noted for a further 27 species of Acanthonevrini, Phascini and Phytalmiini from Australia, West Papua, Papua New Guinea and Solomon Islands. Notes on classification and biogeography are included.

## Introduction

Australasian fruit flies belonging to the subfamily Phytalmiinae (including tribe Acanthonevrini: see Korneyev 1999) have been studied intermittently in recent years, following revisions published for Australia (Permkam and Hancock 1995) and the Indonesia, Papua New Guinea and Solomon Islands region (Hardy 1980, 1982, 1986, 1988; McAlpine and Schneider 1978). In an earlier review (Hancock and Drew 1994), we concentrated on islands of the south-central Pacific. The present study reports on new and interesting records from Australia and the southwestern Pacific, including the descriptions of two new species from Papua New Guinea and Vanuatu.

The following abbreviations for specimen depositories have been used: AMS – Australian Museum, Sydney; AQIS – Australian Quarantine Inspection Service, Sydney; QDPI – Queensland Department of Primary Industries, Brisbane; QMB – Queensland Museum, Brisbane; UQIC – University of Queensland Insect Collection, Brisbane. Tribal and group classification largely follows Korneyev (1999).

## Systematics

### Tribe ACANTHONEVRINI

#### *Acanthonevra* group of genera

#### *Acanthonevra* subgroup

#### *Dacopsis flava* (Edwards)

**Material examined.** PAPUA NEW GUINEA: 2 ♂♂, Northern Province, Kokoda, 1200', ix-x.1933, L.E. Cheesman, BM 1933-427 (UQIC); 1 ♀, Morobe Province, Bubia, Lae, 19.v.1959, J.H. Ardley, on flywire; 1 ♀, Central Province, Brown River, 13.x.1968, T.L. Fenner; 2 ♀♀, Central Province, Goldie River, up river, 15.ii.1999, D. Tenakanai, cue lure P027 (all QDPI).

**Comments.** The species is sexually dimorphic; males, described as *D. picturata* Hardy, have a broad brown central patch on the wing, lacking in females. It breeds in fallen logs of *Dysoxylum gaudichaudianum* (Meliaceae).

*Dacopsis holoxantha* (Hering)

*Comments.* This species is known from New Britain and New Ireland, Papua New Guinea. *Dacopsis apicalis* Hardy, described from males (Hardy 1980), is placed here as a new synonym of *D. holoxantha*, described from a female (Hering 1941). As in *D. flava*, the species is sexually dimorphic, males having a large brown apical wing spot.

*Hexacinia punctifera* (Walker)

*Material examined.* PAPUA NEW GUINEA: 4 ♀♀, East New Britain Province, Keravat, LAES, 20-29.v.1998, 2.ix.1998, 11.ix.1998 & 11.ii.1999, L. Leblanc *et al.*, cue lure P202; 1 ♀, Madang Province, Madang residential area, 5.ix.1999, cue lure P417 (all QDPI).

*Comments.* This species is newly recorded from the Bismarck Archipelago. The number of hyaline spots in cell  $r_1$  is variable in the above series: in two Keravat specimens the middle spot is large, crossing the cell; in one Keravat and the Madang specimens the middle spot is small, at costa only; in the fourth Keravat specimen the middle spot is absent. The absence of the middle spot was used by Hardy (1983) to separate *H. stellipennis* (Walker) and his record of the latter species from Bougainville probably refers to *H. punctifera*. True *H. stellipennis* is known with certainty only from the Philippines, Sabah and Indonesia as far east as Sulawesi.

*Dirioxa* group of genera*Dirioxa fuscipennis* sp. n.

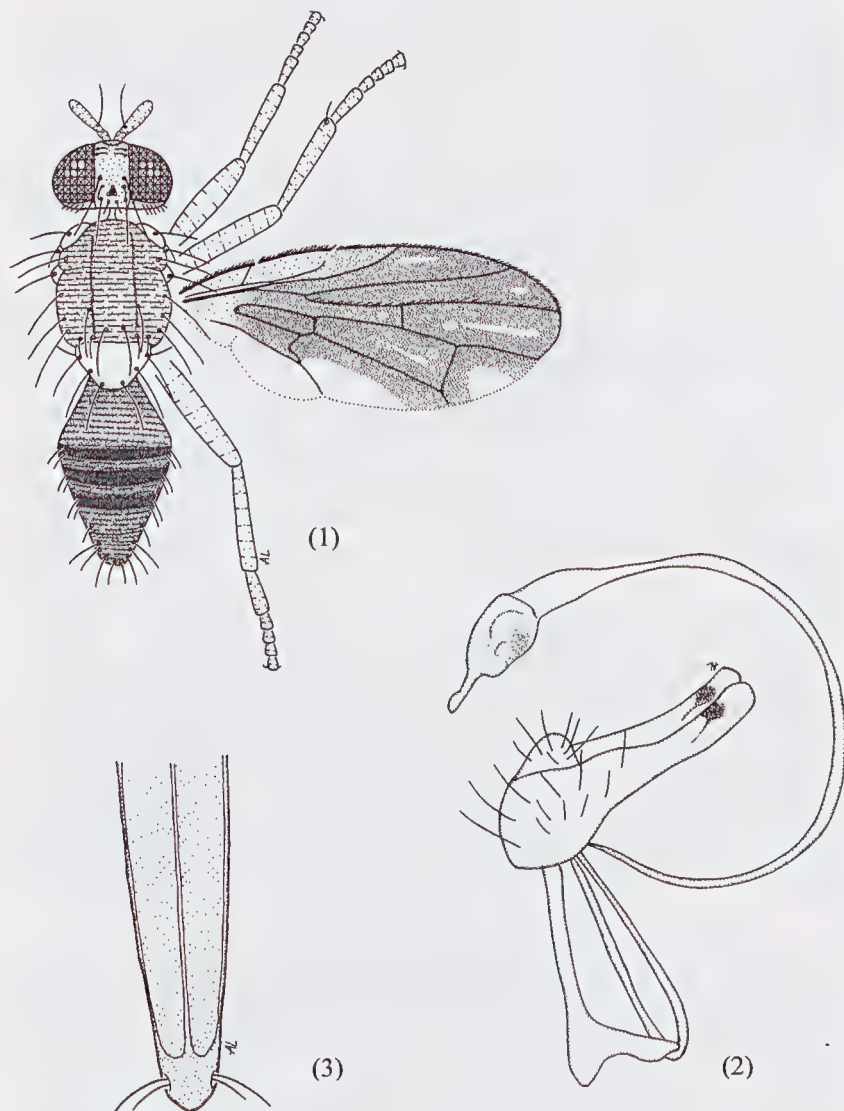
(Figs 1-3)

*Types.* Holotype ♂, VANUATU: Efate, Vila, 7.iii.1982, ex cue lure, R. Paton (in QMB, Reg. No. T 99085). Paratypes: 2 ♀♀, same data as holotype (AQIS); 2 ♀♀, Vila, 27.i.1982, (AQIS); 4 ♂♂, 4 ♀♀, Vila, 24.iii.1982, R. Paton, reared from *Barringtonia* sp. (AQIS); 19 ♂♂, 15 ♀♀, [Vila?], v.1994, A. Kassim, bred ex *Barringtonia edulis* (4 in QMB, Reg. Nos T. 99086-99089; others in QDPI); 1 ♂, Vila, 13.iv.1989, G. Takaro, reared from *Barringtonia edulis*, E 99 (QDPI); 2 ♂♂, 3 ♀♀, Loh Is., [Kwero], 20.vi.1997, D. Tau, ex *Barringtonia edulis*, V 2745 (QDPI); 1 ♂, 2 ♀♀, Aniwa, Tafea, 5.viii.1997, D. Tau, ex *Pouteria guayana*, V 2953/2954 (QDPI).

*Description.* Male (Fig. 1). Length of body 4.5 mm; of wing 4.9 mm. Head higher than long, red-brown; antennae shorter than face, third segment apically rounded, arista plumose; face flat, oral margin projecting; frons pubescent. Setae black: 2 pairs of frontal setae plus 2 extra pairs of weak setulae posteriorly; 2 pairs of orbital setae; ocellar setae vestigial. Postocular row of setae thin and black; genal seta red-brown.

Thorax fulvous, darker yellow-brown on scutum; a narrow whitish border posteriorly on anepisternum. Setae black: postpronotal, 2 notopleural, presutural, supra-alar, postalar, intra-alar, 2 weak intrapostalar, prescutellar acrostichal, dorsocentral placed midway between supra-alar and postalar setae, 2 anepisternal, anepimeral, katepisternal.

Scutellum bare, with 6 strong scutellar setae. Halteres fulvous. Legs fulvous; mid tibia with an apical black spine.



Figs 1-3. *Dirioxa fuscipennis* sp. n. (1) male; (2) male genitalia; (3) female aculeus.

Wing almost entirely dark brown; hyaline or subhyaline spots and streaks often present in cell  $r_1$  just beyond apex of vein  $R_1$  and near apices of cells  $r_{2+3}$ ,  $r_{4+5}$  and dm; small round subhyaline spots present near apex of cell dm and in cells br and  $r_{4+5}$ , either side of R-M crossvein; broad indistinct hyaline indentations in cells m and  $cu_2$ ; alula and anal lobe hyaline. Pterostigma almost as long as cell c; veins  $R_1$  and  $R_{4+5}$  setose; R-M crossvein placed a little beyond middle of cell dm, below apex of pterostigma; cell bcu apically produced and acute.

Abdomen fulvous to red-brown, sometimes with fuscous bands over most or part of terga I-II (except posteriorly) and anteriorly on terga III and IV; tergite V red-brown. Male genitalia (Fig. 2) with surstylus broad and rounded apically; aedeagal glans with an apical projection.

Female as for male except genital characters. Tergite VI less than half length of tergite V; oviscapae red-brown, length 0.75 mm; aculeus (Fig. 3) with apex rounded and long preapical setae.

*Host plants.* Most of the above specimens were bred from fruit of *Barringtonia edulis* (Lecythidaceae), with one record from *Pouteria guayana* (Sapotaceae).

*Distribution.* Occurs throughout Vanuatu, being recorded from Loh Island (Torres Group) in the north, Efate in the central islands and Aniwa in the south.

*Comments.* This species keys to *Hexaresta* Hering in Hardy (1986, as *Hyponeothemara* Hardy) but the three marginal hyaline spots in wing cell M, characteristic of the *Neothemara* subgroup of genera, are represented by a single, large spot in *D. fuscipennis*. This single spot, together with the presence of intrapostalar setae and a single long midtibial apical spine, is characteristic of the *Dirioxa* group [*Dirioxa* Hendel, *Lumirioxa* Permkam & Hancock and *Micronevrina* Permkam & Hancock]. *D. fuscipennis* is placed in *Dirioxa* based on its fruit-infesting biology and similar aculeus and male genitalia. It differs from other species in the mostly fuscous wing and abdominal pattern characters.

#### ***Dirioxa incerta* (Hardy), comb. n.**

*Comments.* Described as a species of *Acanthonevra* Macquart from the Star Mts in West Papua (Indonesia), this species differs from all others placed in *Acanthonevra* in the posterior position of the orbital setae, alignment of the hyaline indentation in wing cell  $r_1$  (directly above R-M crossvein) and shape of the aculeus and spermathecae (Hardy 1986). In these and other characters (including the 2 pairs of frontal setae) it agrees with *Dirioxa* and is placed here in the new combination *Dirioxa incerta* (Hardy). It closely resembles *D. pornia* (Walker), differing in the reduced hyaline areas in wing cell dm and the apparent absence of intrapostalar setae.



*Themaroides* group of genera*Clusiosoma* subgroup*Clusiosoma pleurale* Malloch

*Material examined.* SOLOMON ISLANDS: 18 ♂♂, 13 ♀♀, NW Guadalcanal, Verahue School, 4.viii.1994, R. Wylie *et al.*, bred ex *Ficus septica*, SI 0042; 2 ♂♂, 1 ♀, NE Guadalcanal, Wowota, 16.xii.1994, R. Wylie *et al.*, bred ex *Ficus* sp., SI 0418; 1 ♀, NE Guadalcanal, Ruavatu, 12.i.1995, R. Wylie *et al.*, SI 0639; 1 ♀, NE Guadalcanal, Adeade Village, 17.xi.1995, E. Valega, cue lure; 3 ♂♂, 3 ♀♀, NE Guadalcanal, 3 km W of Adeade, 11.ix.1996, R. Hollingsworth & C. Sare, bred from *Ficus septica*; 2 ♂♂, 2 ♀♀, NW Guadalcanal, Tambea Pt, 4.iii.1997, F. Tsatsia, bred from *Ficus* sp., SI 2010 (all QDPI).

*Comments.* Most of the above specimens were bred from the fruit of *Ficus septica* or *Ficus* sp. (Moraceae).

*Clusiosoma pullatum* Hering

*Material examined.* PAPUA NEW GUINEA: 1 ♂, Morobe Province, Tikeling Village forest, 1.v.1999, D. McGuire, on fig fruit (QDPI).

*Clusiosoma semifuscum* Malloch

*Material examined.* AUSTRALIA: 4 ♂♂, 4 ♀♀, N Queensland, Gordon Creek, Iron Range, 12°58'S, 143°31'E, 17-22.ii.1993, M. Ross & R. van Klinken, bred *Ficus nodosa* fruit, rainforest (UQIC).

*Comments.* *Ficus nodosa* is a new Australian host record for this species; for others see Hancock *et al.* (2000).

*Clusiosomina puncticeps* (Malloch)

*Material examined.* AUSTRALIA: 2 ♂♂, 5 ♀♀, SE Queensland, The Head, Teviot Creek, 28°14'S, 152°28'E, 3.xi.1992, R. van Klinken, open forest, bred ex *Ficus coronata* fruit (UQIC); 2 ♂♂, 2 ♀♀, Simpson Park, Mt Coot-tha, Brisbane, 26.i.1994, R. van Klinken, parkland, bred from *Ficus fraseri* fruit (UQIC); 35 ♂♂♀♀, Cunningham's Gap, via Aratula, 28°03'S, 152°23'E, 18.iv.1998, C.J. Burwell, swept from *Ficus coronata* (QMB).

*Comments.* The above records from *Ficus coronata* validate the Gayndah record noted by Permkam and Hancock (1995), while *F. fraseri* is a new Australian host record; for others see Hancock *et al.* (2000).

*Rabaulia fascifacies* Malloch

*Material examined.* SOLOMON ISLANDS: 1 ♂, NE Guadalcanal, Tenaru Falls, 17.viii.1994, R. Wylie *et al.*, bred ex *Ficus pseudowassa*, SI 0152; 1 ♂, NE Guadalcanal, Ada, 19.x.1994, R. Wylie *et al.*, SI 0346; 15 ♂♂, 10 ♀♀, Guadalcanal, Honiara, Botanical Gardens, 12 & 20.xii.1994, R. Wylie *et al.*, bred from *Ficus copiosa*, SI 0397 & 0491; 4 ♂♂, 2 ♀♀, same locality, 18.vii.1995, R. Hollingsworth, SI 1031; 5 ♂♂, 7 ♀♀, NE Guadalcanal, Kolodavo, 16.xii.1994, R. Wylie *et al.*, bred from *Ficus* sp., SI 0436; 12 ♂♂, 9 ♀♀, N. Guadalcanal, Mt Austen, 8.ix.1996, M. Valego, ex *Ficus* sp.; 1 ♂, E Guadalcanal, CDC 1, 10.iii.1997, E. Valenga & M. Vagalo, bred ex *Ficus* sp., SI 2105; 6 ♂♂, 4 ♀♀, Choiseul Is, Malangona, 16.xii.1995, R.G. Hollingsworth, bred from *Ficus* sp., SI 1656 (all QDPI).

*Comments.* Records of *R. fascifacies* from Australia (Permkam and Hancock 1995) are misidentifications of *R. nigrotibia* Hering. Most of the above specimens were bred from the fruit of *Ficus copiosa*, *F. pseudowassa* and *Ficus* sp. Choiseul is a new island record.

*Trypanocentra nigrithorax* Malloch

*Material examined.* PAPUA NEW GUINEA: 2 ♂♂, Morobe Province, Forest Research Institute, Lae Botanic Garden, 21.xi.1998, A. Mararuai, cue lure P402; 1 ♂, Morobe Province, Gabensis Village, 1.vii.1999, S. Sar & S. Balagawi, cue lure P407 (all QDPI).

*Comments.* The above records are the first from Morobe Province.

*Neothemara* subgroup

*Hexaresta multistriga* (Walker)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Central Province, Owens Corner, Kokoda Trail, c 2000', 23.iv.1966, J.J.H. & M.L. Szent-Ivany, in forest (QDPI).

*Comments.* Hardy (1986) referred this species and *H. formosa* (Malloch), from Solomon Islands, to *Hyponeothemara* Hardy, which is currently placed as a synonym of *Hexaresta* Hering. Nothing is known of the biology of *Neothemara* subgroup species.

*Neothemara formosipennis* (Walker)

*Material examined.* PAPUA NEW GUINEA: 1 ♂, 1 ♀, Northern Province, Kokoda, 1200', L.E. Cheesman, BM1933-577 (UQIC); 1 ♂, 2 ♀♀, Western Province, Matkomrae Village, c 50 km N of Kiunga, 60 m, 5°49'S, 141°09'E, M.S. Moulds & S. Cowan (AMS).

*Comments.* This species is widespread throughout the island of New Guinea.

*Pseudacanthoneura sexguttata* (de Meijere)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Central Province, Brown R, nr Port Moresby, 16.viii.1966, E. Mann (UQIC); 1 ♂, Northern Province, Mt Lamington district, C.T. McNamara (UQIC).

*Comments.* The above records add to the few known from Papua New Guinea (Hardy 1986). This species also occurs in northern Queensland.

*Pseudoneothemara exul* (Curran)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, East New Britain Province, Vudal Settlement, 15.i.2000, Kalu Naman, methyl eugenol P230 (QDPI).

*Comments.* This species is known only from Solomon Islands and the Bismarck Archipelago.

*Themaroides* subgroup

*Bululoa spinicosta* Hardy

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Morobe Province, Garaina, 2500', 20.vi.1967, T.L. Fenner, ex *Elettaria cardomomum* (QDPI).

*Comments.* The types were collected on a bamboo stem (Hardy 1986) and it is not certain whether the above specimen was bred from *Elettaria cardomomum* (cardomom: Zingiberaceae) or collected on it.

*Enoplopteron hieroglyphicum* de Meijere

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Northern Province, Popondetta, 2.v.1967, G. Baker; 1 ♀, Madang Province, Ramu Sugar, Residential area, 7.vii.1999, cue lure P411; 1 ♂, East New Britain Province, Vudal Agric. College, Dam 3, 14.x.1970, S. Joko (all QDPI).

*Comments.* Previously known from West Papua and mainland Papua New Guinea (Hardy 1986), this species is newly recorded from the Bismarck Archipelago.

*Termitoriox a bicalcarata* (Hering)

*Material examined.* AUSTRALIA: 23 ♂♀, C Queensland, Expedition Range N.P., 'Amphitheatre' vine scrub, 25°13'S, 148°59'E, 520 m, 17.xii.1997, C. Burwell & S. Evans (QMB).

*Comments.* Although Korneyev (1999) placed *Termitoriox a* Hendel and related genera in his *Diarrhegma* group of genera, he also suggested a relationship with the *Themaroides* group and that arrangement is preferred here.

*Termitoriox a exleyae* Permkam & Hancock

*Material examined.* AUSTRALIA: 1 ♂, 2 ♀♀, NW Queensland, Lawn Hill Nat. Park, 18°29'-18°38'S, 138°04'-138°12'E, nr Musselbrook Research Centre - Murrays Spring, Musselbrook Creek & 2 km along Ridgpole Waterhole Rd., 6, 11 & 12.v.1995, M.A. Schneider & G. Daniels (UQIC).

*Comments.* The distribution of this species is extended eastwards to NW Queensland.

*Termitoriox a laurae* Permkam & Hancock

*Material examined.* AUSTRALIA: 2 ♀♀, NW Queensland, Lawn Hill Nat. Park, Amphitheatre Spring area, 28 km N of Musselbrook Research Centre, 18°20'58"S, 138°11'09"E, 200 m, 13.v.1995, G. Daniels & M.A. Schneider (UQIC).

*Comments.* The above record is the first from NW Queensland for this northern Australian species.

*Termitoriox a meritoria* (Walker)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Morobe Province, Finschhafen, Rev. L. Wagner; 1 ♂, Northern Province, Mt Lamington, 1300-1500', C.T. McNamara; 2 ♂♂, 3 ♀♀, Northern Province, Kokoda, 1200', iv.1933, L.E. Cheesman, BM1933-577 (all UQIC).

*Comments.* This species is widespread throughout New Guinea. The Kokoda specimens also carry type labels of an undescribed species named by F.A. Perkins.

*Termitoriox a termitoxena* (Bezzi)

*Material examined.* AUSTRALIA: 1 ♂, NW Queensland, Newcastle Range, Georgetown, 7.ii.1999, J. Hasenpusch (QMB).

*Comments.* The above record is the first from NW Queensland for this northern Australian species. It breeds beneath the bark of trees (Hancock 2002).

*Themarohystrix variabilis* Hardy

*Material examined.* INDONESIA (WEST PAPUA): 1 ♀, Manokwari, 1.vi.1933, Dwi, ex cocoa, JT 1132B (QDPI).

*Comments.* The note 'ex cocoa' probably refers to collection site rather than a host record.

*Themaroides abbreviata* (Walker)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Morobe Province, Bubia, Lae, J.H. Ardley, rainforest (QDPI).

*Comments.* This species is widespread throughout New Guinea.

*Themaroides bicolor* sp. n.

(Figs 4-5)

*Type.* *Holotype* ♀, PAPUA NEW GUINEA: East New Britain Province, Baining Mts, base camp, DPI station, near Raunsepna, 28.iv.1999, T. Clarke & D. McGuire, P205, hand collected (in QMB, Reg. No. T 99090).

*Description.* Female (Fig. 4). Length of body (excluding oviscap) 9.8 mm; of wing 10 mm. Head slightly higher than long, orange-brown except face yellow; antennae orange-brown, third segment abraded; face gently convex. Setae black: 2 pairs of frontal setae close together; 2 pairs of orbital setae, the lower pair placed close to frontals; ocellar setae vestigial. Postocular row of setae thin and black; genal seta well developed.

Thorax orange-brown; postpronotal lobe and notopleura fulvous, a diffuse fuscous prescutellar area on scutum; a narrow fuscous line along top of anepisternum. Setae black: postpronotal, 2 notopleural, presutural, 2 long supra-alar, postalar, intra-alar, intrapostalar, prescutellar acrostichal, dorsocentral placed midway between supra-alar and postalar setae, 2 anepisternal, anepimeral, katepisternal. Scutellum orange-brown, densely setose over entire surface, with 6 strong scutellar setae and an additional pair of weak setae between medial and apical pairs. Katepisternum with additional black setae before coxa. Legs fulvous; mid tibia with 2 long, subequal apical black spines; fore and hind coxae with black setae; apical half of fore femora with dorsal and ventral rows of black setae; hind tibiae with subdorsal row of black setae.

Wing mostly dark brown except yellow basally to level of the distinct costal seta; with a weak, subhyaline indentation at apex of cell  $r_{4+5}$  and broad

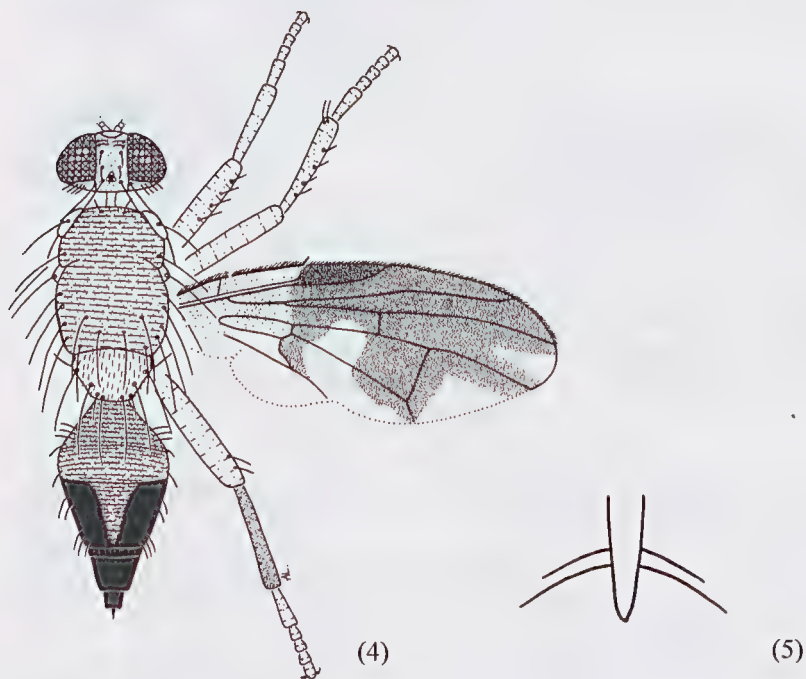


hyaline indentations in cells m and cu<sub>2</sub>, the latter crossing cell dm into cell br; alula and anal lobe hyaline. Pterostigma almost as long as cell c; veins R<sub>1</sub> and R<sub>4+5</sub> setose; R-M crossvein placed a little beyond middle of cell dm, below apex of pterostigma; cell bcu apically produced and acute.

Abdomen oval; terga I+II, III and medial portion of IV and V orange-brown; lateral parts of terga IV and V broadly black; tergite VI black, less than a quarter length of tergite V; oviscape black, flattened, length 1.1 mm, about as long as terga V and VI combined; tip of aculeus (Fig. 5) narrow, apically rounded and with long preapical setae.

*Distribution.* Known only from New Britain, Bismarck Archipelago.

*Comments.* *T. bicolor* resembles *T. vittata* Hardy but the scutellum is covered with microsetae and has only 1 pair of extra scutellar setae, while the wing base before the pterostigma is yellow. This is the only species of *Themaroides* Hendel recorded as far east as the Bismarck Archipelago, although *Themaroidopsis rufescens* Hardy, from Bougainville, has a similar wing pattern and may belong in *Themaroides*.



Figs 4-5. *Themaroides bicolor* sp. n. (4) female; (5) tip of aculeus.

## Tribe PHASCINI

*Paraphasca taenifera* Hardy

(Fig. 6)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Chimbu Province, Kerowagi Station, 2.ix.2000, Nixon Nebare, methyl eugenol P441 (QDPI).

*Comments.* In the above specimen the wing band across R-M crossvein is more extensive than in typical specimens (Hardy 1986), connecting with the band across DM-Cu crossvein (Fig. 6). However, it has the characteristic black hind border to the scutum and appears to belong here.

*Phasca trifasciata* Hardy

(Fig. 7)

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Central Province, Sogeri, nr Port Moresby, 17.xii.1998, R. Drew & D. McGuire; 2 ♂♂, 1 ♀, Central Province, Rouna Falls, 2.ii.1999, on outside of cue lure trap P024; 1 ♂, 3 ♀♀, Central Province, Rouna Forest, 2.iii.1999, D. Tenakanai, by hand (all QDPI).

*Comments.* The female (Fig. 7) was previously unrecorded; the tip of the ovipositor is flat and broad, narrowing to a point at apex and with distinct preapical setae. All known records are from Central Province in Papua New Guinea and the Merauke district of SE West Papua, Indonesia.

*Xenosiphira invibrissata* Hardy

*Material examined.* PAPUA NEW GUINEA: 3 ♂♂, 2 ♀♀, Morobe Province, Mt Missim, 1250 m, 11.xii.1980, cue lure; 2 ♀♀, Mt Missim, ant plant gully, Sites 18 & 30, 1200 m, 18.xii.1980, A. Allison, cue lure; 1 ♂, 4 ♀♀, Mt Missim, bamboo thicket, Site 21, 1100 m, 6.xi. & 18.xii.1980; 2 ♂♂, 2 ♀♀, Mt Missim, rain gauge, Site 20, 1250 m, 30.x.1980; 1 ♀, Mt Missim, car park, Site 29, 1350 m, 18.xii.1980 (all QDPI).

*Comments.* *Xenosiphira* Hardy was included in the *Sophira* complex [*Ptilona* subgroup, *Acanthonevra* group of genera] by Hardy (1980) but placed in tribe Phascini by Korneyev (1999). The second, posterior, pair of dorsocentral setae recorded by Hardy (1980) are actually the intrapostalar setae.

## Tribe PHYTALMIINI

*Diplochorda trilineata* de Meijere

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Madang Province, Brahman High School, 30.i.2000, cue lure P412 (QDPI).

*Comments.* This species is sometimes spelt 'trineata', an incorrect original spelling. Malloch (1939) also included records under the name 'D. myrmex', a misidentification.

*Diplochorda unistriata* Malloch

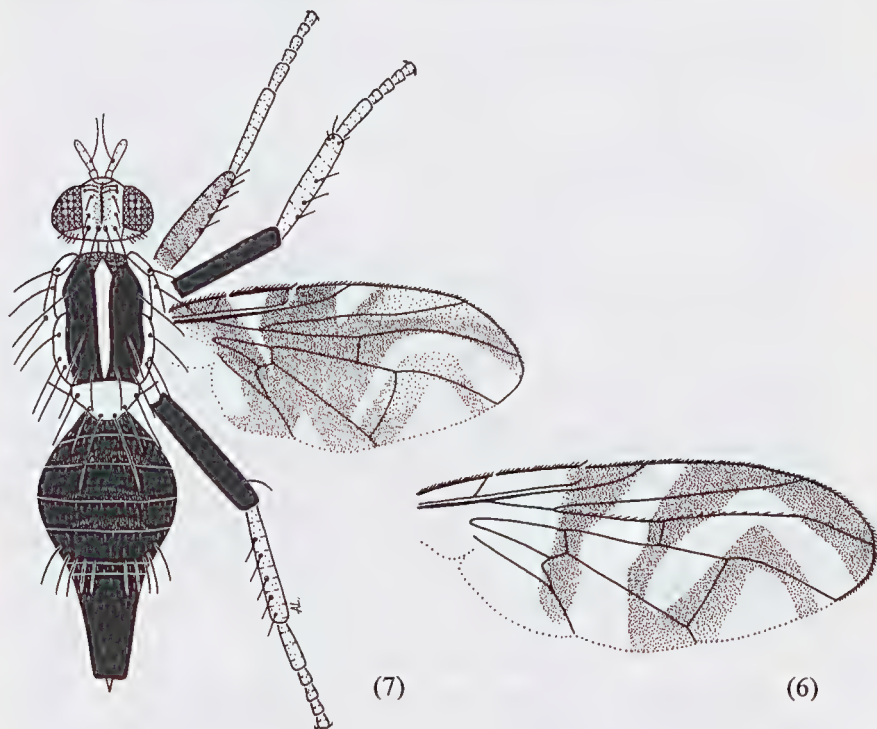
*Material examined.* PAPUA NEW GUINEA: 1 ♀, Eastern Highlands Province, Arau, Kainauto S.D., 4000', 16.x.1959, J.H. Barrett, on *Ficus* leaves in regrowth thicket (QDPI).

*Comments.* Previously recorded from Mondo, Central Province (Malloch 1939).

*Phytalmia megalotis* Gerstaecker

*Material examined.* PAPUA NEW GUINEA: 1 ♀, Central Province, Vesilogo Village, Sogeri Plateau, 15.x.1998, D. Tenakanai, cue lure P009 (QDPI).

*Comments.* This species is widespread throughout New Guinea.



**Figs 6-7.** Phascini. (6) *Paraphasca taenifera*, wing; (7) *Phasca trifasciata*, female.

### Discussion

The phylogenetic relationship between Acanthonevrini, Phytalmiini and allied groups and other tribes placed in subfamily Trypetinae has been the subject of intensive study in recent years. Permkam and Hancock (1995) suggested a close relationship between Acanthonevrini and Phytalmiini but considered them to be tribes within subfamily Trypetinae. Korneyev (1999), however, considered subfamily Phytalmiinae to be distinct from subfamily Trypetinae

and recognised four tribes within the former: Acanthonevrini, Epacrocerini, Phascini and Phytalmini. That arrangement is accepted here. The subfamily Phytalmini is well represented in New Guinea and Australia, extending into the Pacific as far east as Fiji. Sixty genera occur in this region, listed below according to Korneyev's (1999) classification of tribes and generic groups.

*Robertsomyia paradoxa* Hardy, from Papua New Guinea, is often included in the tribe Phytalmini but has widely forked vanes on the aedeagal apodeme, an elongate, apically subtriangular outer surstylus and a pair of tubercles on the scutellum (Hardy 1983) and is transferred here to the Platystomatidae. It keys near *Angitula* Walker (McAlpine 2001), sharing with it a great reduction in head and thoracic setae, tuberculate scutellum, sclerotised metathoracic postcoxal bridge and narrow wings with a straight vein Sc that does not meet the costa, vestigial anal lobe and no alula.

### Classification

#### Tribe Acanthonevrini

##### *Acanthonevra* group of genera

*Acanthonevra* subgroup: *Anchiacanthonevra* Hardy, *Austronevra* Permkam & Hancock, *Austroriox*a Permkam & Hancock, *Copiolepis* Enderlein, *Dacopsis* Hering, *Gressittidium* Hardy, *Hexacinia* Hendel, *Mimoeuphranta* Hardy and the Fijian *Parachlaena* Hering.

*Ptilona* subgroup (*Sophira* complex): *Loriomyia* Kertész [= *Agnostophana* Hering] and *Stymbara* Walker from New Guinea, *Exallosophira* Hardy from Solomon Islands and *Enicopterina* Malloch from Fiji.

##### *Dirioxa* group of genera

*Dirioxa* Hendel, *Lumirioxa* Permkam & Hancock and *Micronevrina* Permkam & Hancock.

##### *Themaroides* group of genera

*Clusiosoma* subgroup: *Cheesmanomyia* Malloch, *Clusiosoma* Malloch, *Clusiosomina* Malloch, *Hemiclusiosoma* Hardy, *Nothoclusiosoma* Hardy, *Paedohexacinia* Hardy, *Rabaulia* Malloch, *Rabauliomorpha* Hardy and *Trypanocentra* Hendel.

*Neothemara* subgroup: *Alloeomyia* Hardy, *Hexaresta* Hering [= *Hyponeothemara* Hardy], *Lyronotum* Hering, *Neothemara* Malloch, *Pseudacanthoneura* Malloch, *Pseudoneothemara* Hardy and *Quasirhabdochaeta* Hardy.

*Themaroides* subgroup: *Acanthonevroides* Permkam & Hancock, *Aridonevra* Permkam & Hancock, *Buloloa* Hardy, *Enoplopteron* de Meijere, *Taeniorioxa* Permkam & Hancock, *Termitorioxa* Hendel [= *Kertesziola* Hering], *Themarohystrix* Hendel, *Themaroides* Hendel, *Themaroidopsis* Hering and *Walkeraitia* Hardy.



## Tribe Epacrocercini

*Epacrocercus* Hardy, *Proepacrocercus* Hardy, *Sophiropsis* Hardy, *Tanymetopus* Hardy and *Udamolobium* Hardy.

## Tribe Phascini

*Diarrhegmoides* Malloch, *Othniocera* Hardy, *Paraphasca* Hardy, *Phasca* Hering, *Stigmatomyia* Hardy and *Xenosophira* Hardy.

## Tribe Phytalmiini

*Diplochorda* Osten Sacken, *Ortaloptera* Edwards, *Phytalmia* Gerstaecker and *Sessilina* McAlpine & Schneider.

## Unplaced genera

*Polyara* Walker, *Polyaroidea* Hardy and *Pseudacrotoxa* Hering form a small complex of New Guinea genera that breed in bamboo shoots. They require further study before they can be placed satisfactorily in any of the above tribes or even in the Phytalmiinae. The elongate aculeus lacks distinct preapical setae and is not typical of the subfamily (see Hardy 1986, 1988), while the number and shape of the spermathecae are unrecorded.

*Biogeography*

Tribes Epacrocercini and Phascini are wholly restricted to the island of New Guinea, while Phytalmiini is almost restricted (also occurring in northeastern Queensland). Tribe Acanthonevrini is more widespread, being well represented in Asia and weakly in Africa. However, within this tribe, the *Themaroides* group of genera is restricted to Australia, Timor, Maluku, New Guinea and islands of the southwestern Pacific, while the *Dirioxa* group occurs in Australia, New Guinea, New Caledonia [introduced ?] and Vanuatu. The *Diarrhegma* group contains one Asian-Indonesian genus and the *Acanthonevra* group is primarily southeast Asian, with a few genera in Africa and a few in the New Guinea – Australia – Pacific region.

*Emheringia longiplaga* (Hering), from Ambon, Maluku, was included in the *Dirioxa* group by Korneyev (1999). However, *Emheringia* Hardy [= *Heringomyia* Hardy] belongs in the *Sophira* complex and is placed here as a new synonym of *Seraca* Walker. *S. longiplaga* (Hering), comb. n. differs from other similarly-patterned species in the genus by its better developed secondary scutellar setae. Other *Seraca* species occur in Sulawesi.

Single records of *Rioxa discalis* (Walker) [= *R. sumatrana* Enderlein] from Malaita, Solomon Islands and *Themara lunifera* Hering from Bougainville, Papua New Guinea (Hardy 1986) are doubtful and require confirmation; the specimens may have been mislabelled. A record of *Rioxa sexmaculata* (van der Wulp) from West Papua [= Irian Jaya], Indonesia (Hardy 1986) is a lapsus; the locality Soekaboemi is in Java. Neither *Rioxa* Walker nor *Themara* Walker is known otherwise east of Borneo.

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